REMARKS/ARGUMENTS

The Examiner is thanked for his review of the application. This response to the final rejection is made in light of the Examiner's interview of October 7, 2009 where the Applicants spoke with the Examiner regarding points of novelty of the present invention in light of the cited art and possible new art identified by the Examiner.

Claims 1, 3-7, 9-14, 16-21, 25-27 and 29 remain in this application. Claims 1, 14, 21 and 26-27 have been amended. Claims 22-24 and 28 have been cancelled without prejudice to the subject matter contained therein. Claim 29 has been added. No new matter has been added.

35 U.S.C. 101

In the Office Action dated August 18, 2009, the Examiner has rejected Claims 14-16-21, 23-25 and 27 under U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Regarding this rejection, the Examiner has also stated that "based on Supreme Court precedent1 and recent Federal Circuit decisions, § 101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing…In this particular case, independent process claims 14 and 21 are not tied to any particular apparatus. Therefore, they are not patent eligible processes/methods under 35 U.S.C. § 101."

Claims 14, 21 and 27 have been amended to state, in relevant part "using a processor." The method recited by these base claims is thus tied to a statutory apparatus (i.e., 'processor') thereby rendering the claims statutory subject matter.

Support for the amendments to Claims 14, 21 and 27 may be found at page 6, lines 6-16 of the specification as filed, which states "instructions which when executed by a processor, causes the processor to compute a preferred set of prices for a subset of a plurality of products is provided."

The amendments to claims 14 and 21 renders the rejections of claims 14-16-21, 23-25 and 27 under U.S.C. § 101 moot. Further, given that the base claims 14 and 21 are now tied to a statutory class, Applicants believe that these claims are now allowable for at least these reasons.

35 U.S.C. 103

The Examiner has also rejected Claims 1, 3-7, 9-13, 26, and 28 under 35 U.S.C. 103(a) as being unpatentable over Ouimet et al. (6,094,641). Regarding this rejection the Examiner has stated that "Ouimet et al. teach an apparatus comprising a computer readable media that can be used for calculating a preferred set of prices for a plurality products or a subset of said plurality (figure 2)."

Further, the Examiner stated that Claims 14 and 16-27 are rejected under 35 US.C. 103(a) as being unpatentable over Ouimet et al., (US. Patent No. 6,094,641) ("Ouimet") in view of Hartman et al., (US. Patent No. 5,987,425) ("Hartman") and Delurgio et al., (U.S. Patent No. 6,553,352) ("Delurgio").

As per the discussion between the Applicants and the Examiner during the Examiner's interview of October 7, 2009, Applicants believe that the present invention is nonobvious over Ouimet et al., Hartman et al. and Delurgio et al. because the cited references neither teach nor suggest each and every element of claims 1, 14, or 21-24.

As noted previously, calculations for price optimization, when utilizing Bayesian statistics, are very computationally intense. Thus, as a practical necessity, price optimization must be performed for a smaller set of products than is typically present in a retailer's inventory. The problem is in determining *which* products to optimize for. The present invention's subset generator solves this problem.

Prior systems generate price optimizations for all products or some arbitrary grouping of products. Contrary, the present invention has one or more "business goals" (i.e., profit maximization, volume goals and/or market share goals). The subset of products which undergo price optimization is then selected from the entire product listing in order to have the largest impact upon the business goal(s) of any subset of products. Base Claims 1, 14 and 21-24 are believed to be allowable for including this novel aspect within their limitations.

Particularly, as identified in the Examiner's interview, the claimed method of subset generation is believed novel over the cited art for at least four reasons: 1) Base Claims 1, 14, and 21-24 have been amended to further differentiate the present invention from all cited art, 2) Hartman and Ouimet are incompatible art, 3) Ouimet fails to disclose product subset generation, and 4) the groupings of products in Hartman is for separate purposes and performed in a different way then the subset generation of the present invention. Each of these arguments is discussed in more detail below.

I. Amended Base Claims

Base Claims 1, 14, and 21 have been amended to recite, in relevant part "wherein the selected no more than N products has the largest impact on a business objective of any subset of no more than N products of the plurality of products, wherein the business objective is at least one of profit maximization, sales volume goal and market share goal."

Support for these amendments may be found at page 14, lines 12-17; page 134, lines 9-14; and page 141, lines 1-4 which states "The rules normally include an optimization, such as optimizing profit or optimizing volume of sales of a product and constraints such as a limit in the variation of prices. The optimal (or preferred) set of prices is defined as prices that define a local optimum of an econometric model which lies within constraints specified by the rules … The subset optimization may choose the products that comprise this subset in a way that has the largest impact on the client's objective function. If, for example, the client's objective is to maximize profit, it is desirable to populate the subset of products whose prices are allowed to change with those products that are most likely to have the largest impact on profit … An objective function is the sum of these binary variables weighted by the maximum marginal value on each product's price obtained in the step of constructing the set of candidates for subset optimization."

The amendments to base claims 1, 14 and 21-24 render the Examiner's rejections moot. Further, the amendments to these claims further distinguish the present invention from the cited art. Thus, base claims 1, 14 and 21-24 as amended are now believed allowable for at least this reason.

II. Hartman and Ouimet are incompatible

Applicants believe that Hartman is not combinable as a matter of art with Ouimet. Applicants believe that the methodology of **Hartman is simply incompatible with Ouimet**.

The method disclosed in Ouimet appears to be a system for further tuning a demand model by taking into account "psychological effects". (column 3, lines 1-3). The "modified demand model from the Tuning Process [is utilized] to determine **the price** for each item that will **maximize profits**." (Column 5, lines 45-50). (Emphasis added). As such, Ouimet appears to **necessitate** computing **specific, singular output values: the price for each item that maximizes profits**.

In contrast, Hartman teaches away from Ouimet by disclosing a method for developing "**variable margin pricing** of products" rather than a specific value (column 1, lines 6-10). In Hartman a "**radically different approach** has been taken . . . where the basic philosophy is that **retail prices only need to be close to a vague undefined target.**" (Column 2, lines 56-60) (Emphasis added). Further, Hartman states that "there is no such thing as a correct retail price." (Column 4, lines 41-43). Hartman **self proclaims its "radical[]" distinctiveness** in no uncertain terms. (Emphasis added).

As such, Hartman's **methodology appears to be at complete odds to the method of Ouimet.** With such a fundamental difference of methodology, it is clear that the methods disclosed by Hartman, and that of Ouimet, are incompatible methods and thus, at the least, their combinability is non-obvious.

III. Ouimet fails to disclose product subsets

As noted, Ouimet discloses "[a] method for incorporating psychological effects into a demand model" by selecting a model, tuning the model, optimizing and outputting the results of optimization. (See Abstract; see also Figure 3 and accompanying text at Column 3, line 43 to Column 4, line 24).

The primary focus of Ouimet appears to be the inclusion of psychological factors such as how prices are perceived and product visibility. (Column 3, lines 1-12). In Ouimet, a demand model is selected, a pricing perception model is selected, and a visibility model is selected.

(Column 4, lines 35-66). The demand model is then tuned by multiplying the original demand model by the pricing perception model, and visibility model. (Column 5, lines 14-21).

However, **Ouimet fails to disclose any mention of subset generation**. Also Ouimet does not discuss **optimization of a subset** of products. Furthermore, Ouimet appears to not include any teaching, suggestion or even contemplation of product subsets for optimization or any other purpose.

Given that Ouimet fails to teach, suggest or show motivation of these limitations, Applicants believe that Claims 1, 3-7, 9-21, and 26 are allowable for at least these reasons.

IV. Hartman differs in product grouping's purpose, result and method

Hartman discusses the generation of "retail prices based on customer price sensitivity." (See Abstract). Further, Hartman discloses a system which teaches away from pricing optimization in favor of "[a] radically different approach [] where the basic philosophy is that retail prices need to be close to a vague undefined target." (Column 2, lines 55-59).

Hartman discloses pooling products at Column 4, lines 35-43. This pooling is performed by "price sensitivity." *Id.* This pooling is performed by dealers "based upon their industry experience." See Column 4, lines 19-23. Then, **all pools have their price set**, but in a way that is at odds with price optimization. (Column 8, lines 58-64). Thus, the pooling of Hartman differs from the subset generation by: 1) purpose (price sensitivity versus business goal of profit, volume and market share); 2) method (dealer decisions based on industry experience versus mathematical maximization of the business goal given a constrained subset size); and 3) result (random products with similar price sensitivity versus a different group of concrete products which maximize a business goal). Thus, the present invention is not a mere automation of the manual process of Hartman.

Thus, Hartman does not appear to disclose the **generation of a subset of products which have "the largest impact on a business objective" while leaving all other product prices alone, in the manner of Claims 14 and 22**. Moreover, Hartman does not disclose the **optimization of prices**. As such, Hartman clearly fails to disclose **optimization of the subset while holding all other products' prices constant**, as claimed.

Given that Hartman fails to teach, suggest or show motivation of these limitations, Applicants believe that Claims 1, 3-7, 9-21 and 26 are allowable for at least these reasons.

DIFFERENTIATION OF THE PRESENT INVENTION TO NON-CITED ART

In addition to the arguments presented in the Office Action dated August 18, 2009, the Examiner additionally supplied two other references in preparation for the Examiner's Interview of October 7, 2009. The references include Herz et al. (US 2001/0014868 A1) and Zumel et al. (US 2002/0095327 A1) (Hereafter "Herz" and "Zumel", respectively). In the interest of progressing the prosecution of this application, the Examiner requested that the Applicants provide an analysis of how the claimed invention differs from the teachings of Herz and Zumel. The following analysis is provided.

Herz discloses the clustering of people ("shoppers"), "offers" and "items" in order to simplify demand models for application of promotions. See paragraphs 0158, 0161 and 208. This clustering is akin to known techniques of "segmentation" which divides businesses into related segments for demand analysis. Business segments have nothing to do with product subset optimization or selecting a subset of products from a larger product set for pricing of only the subset.

Further, the method of clustering people and offers in Herz is performed by comparing "content" and "associations" among the profiles. See paragraphs 0161-0164. Likewise, the 'item' clustering of Herz involves "grouping purchase items into clusters which tend to be liked by the same people." See paragraph 206. Contrary, the present invention determines a subset of the products which have the largest impact upon the business goal. The products in the subset typically and not 'associated' or have similar 'content', nor is the subset in any way related to items "liked by the same people."

Moreover, the clustering of Herz may be solved through statistical sampling methods, including Gibbs sampling. See paragraphs 212-226. In Gibbs sampling, a person or item is selected at **random** and assigned to a class. The class is then modeled for. *Id.* This method of clustering differs from the ranking of products by their marginal contribution to the business objective and selecting the optimal product subset using a mixed integer program, as is disclosed by the present invention. See the specification as filed at page 134, lines 9-19. Thus there isn't even a mechanical

similarity between Herz and the present invention. As such, Applicants believe that the methods disclosed in Herz are materially distinct from those claimed in the present invention. The invention, as claimed, is also believed novel and non-obvious.

Regarding Zumel, a method is presented where different prices for a particular product is presented to users during a given time interval. See paragraph 0007. This pricing spread may then be utilized to measure 'buy ratios' to generate demand measures as a probability distribution. See paragraph 0036. For this a pool of products are selected for the various pricing. See paragraph 0054. This, when read in its broadest form, may be understood as a subset of products for price setting. However, unlike the present invention, Zumel selects products in this 'pool' based upon if they are "untested". *Id.* Particularly, only products which have not "reach[ed] a pre-determined threshold of demand value." See paragraph 0072. Thus, Zumel appears to be entirely concerned with testing products for demand. Once a product demand is determined, it is no longer selected by the process in Zumel.

This differs from the claimed invention in a number of ways. First of all, the pooling of products in Zumel is for pricing at various price points to determine relative demand, whereas the subset in the claimed invention undergoes a price optimization where a single price is determined for the product. Secondly, Zumel selects the product 'pool' from untested products, whereas the present invention selects products based upon marginal contribution to a business goal such that the subset of products has the largest impact upon the business objective of any subset. Further, the products available to the 'pool' in Zumel are limited to untested products. See paragraph 0060. The present invention has no such constraints. As such, Applicants believe that the methods disclosed in Zumel are materially distinct from those claimed in the present invention. The invention, as claimed, is also believed novel and non-obvious.

MODIFICATIONS TO CLAIMS

A number of modifications have been made to the claims in response to conversations with the Examiner to place the claims in a position of allowability. Those modifications not mentioned above will be discussed below.

Claims 22-24 have been cancelled without prejudice to the subject matter contained therein.

Claim 29 has been added to recite "generating a database populated with the optimized prices of the subset of products." Support for new claim 29 may be found in cancelled claim 23.

Claim 27 has been amended to recite "an imputed variable generator-resolving errors of new data provided, utilizing a grid of time periods including records, said resolving of errors comprising." Support for this amendment to claim 27 may be found at pages 15, line 14 to page 6, line 7 of the specification as filed under the subsection titled "A. Imputed Variable Generator."

In sum, base claims 1, 14, 21 and 26-27 have been amended and are now believed to be allowable. Dependent claims 3-7, 9-13, 16-20, 25-27 which depend therefrom are also believed to be allowable as being dependent from their respective patentable parent claims 1, 14, 21 for at least the same reasons.

Applicants believe that all pending claims 1, 3-7, 9-14, 16-21, 25-27 and 29 are now allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Examiner.

Applicants hereby petition the Examiner for a one-month extension of time with which to respond to the referenced Office Action and have authorized the commissioner via EFS to charge our credit card in the total amount of $940 to pay for the RCE fee ($810) and the one month extension of time fee ($130). The commissioner is authorized to charge any additional fees that may be due or credit any overpayment to our Deposit Account No. 50-2766 (Order No. DEM1P008). Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number 925-570-8198.

LAW OFFICES OF KANG S. LIM
PMB 436
3494 Camino Tassajara Road
Danville, CA 94506
Voice: (925) 570 8198
Facsimile: (925) 736 3974

Respectfully submitted,

/Kang S. Lim/

Kang S. Lim
Attorney for Applicant(s)
Reg. No. 37,491

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